

Arthritides of the Foot

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KEYWORDS

• Midfoot arthritis • Hallux rigidus • Hindfoot arthritis • Arthrodesis

KEY POINTS

- Arthritis of the first metatarsophalangeal joint is the most common arthritis of the foot.
- Midfoot arthritis is commonly due to traumatic events whereas hindfoot arthritis can be due to trauma or deformity.
- Initial treatment of foot arthritis starts with symptomatic treatment and orthotics.
- Surgical treatment of foot arthritis is typically through arthrodesis.

INTRODUCTION

Arthritis is becoming more of a problem with the aging of the population. By 2030, 72.1 million people will be older than 65 years in the United States, more than doubling since 2000.¹ As people get older, the incidence of arthritis increases; people with arthritis have a significantly lower physical and mental quality of life, with more than twice as many people reporting fair or poor health as compared with people without arthritis.² The increasing incidence of arthritis as the US population gets older makes this an important problem for doctors to treat.

Arthritis in the foot can be broken down into 3 subgroups. The first metatarsophalangeal joint can become arthritic in a disease process known as *hallux rigidus*. Second, the tarsometatarsal joints can degenerate, most commonly secondary to an inciting traumatic event. And third, the joints around the hindfoot can become arthritic, either caused by trauma or deformity. These 3 subgroups are discussed in turn through the course of this article.

HALLUX RIGIDUS

The term *hallux rigidus* (Latin for “stiff toe”) is used to describe the symptoms of degenerative arthritis of the first metatarsophalangeal joint. Initially described by Davies-Colley³ in 1887, the term *hallux rigidus* was then coined by Cotterill⁴ a few months later. *Hallux limitus* is also used to describe osteoarthritis of the first

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metatarsophalangeal joint, whereas *hallux rigidus* describes the same condition with no range of motion of the joint.⁵ This condition has been reported to be present in 2.5% of people older than 50 years, making it the most common arthritic condition of the foot.⁶ This condition occurs more commonly in women,^{7,8} and two-thirds of patients have some positive family history of the disorder.⁹

PRESENTATION

Patients with hallux rigidus typically present with pain and swelling of the great toe metatarsophalangeal joint. Synovitis of this joint and decreased dorsiflexion is also seen. The degenerative osteoarthritis of the joint typically starts dorsally and dorsolaterally, with noted bony osteophyte formation.⁵ These osteophytes abut the dorsal aspect of the proximal phalanx, decreasing dorsiflexion of the metatarsophalangeal joint. A dorsal prominence over the proximal aspect of the metatarsophalangeal joint is typically present and is inflamed and painful because of rubbing against the shoe. The dorsomedial cutaneous branch of the superficial peroneal nerve can also become irritated, and dysesthesias or paresthesias along the medial aspect of the hallux can be present.⁷

Physical examination will show a decreased range of motion of the first metatarsophalangeal joint, especially in dorsiflexion. Pain can be elicited in extremes of dorsiflexion and plantarflexion early in the disease; as the disease progresses, pain will start to show up in the midrange of motion. Patients will complain of increased pain with running and going up on their toes, such as in the toe-off section of the gait. Patients will walk with an antalgic gait, attempting to unload the medial column of the foot and decrease the motion of the arthritic first metatarsophalangeal joint through the gait cycle. This gait will start to overload the lateral column of the foot, causing lateral foot pain.

The initial radiographic evaluation of hallux rigidus should be standing anteroposterior (AP), lateral, and oblique projections. Radiographic classification of hallux rigidus has been described by Coughlin and Shurnas¹⁰ and is shown in **Table 1**. Magnetic resonance imaging (MRI) and computed tomography (CT) evaluation is not required unless an osteochondral lesion was suspected. Osteophytes start to appear in later stages on the metatarsal head and the proximal phalanx. Osteophytes manifest initially on the dorsal aspect of the joint, obscuring the joint space (**Fig. 1**). Cartilage loss starts initially on the dorsal aspect of the joint and progresses plantarly, sometimes expanding to the sesamoids.⁹

Grade 0	Dorsiflexion of 40°–60° (20% loss of motion), normal radiographs and no pain
Grade 1	Dorsiflexion of 30°–40°, dorsal osteophytes, minimal to no other joint changes
Grade 2	Dorsiflexion of 10°–30°, mild flattening of MTP joint, mild to moderate joint space narrowing or sclerosis, osteophytes
Grade 3	Dorsiflexion of less than 10°, decreased plantar flexion, hypertrophied cysts, erosions, or irregular sesamoids on radiograph; moderate to severe pain, pain at extremes of range of motion
Grade 4	Stiff toe, radiographs showing loose bodies or osteochondral defects, pain throughout range of motion

Abbreviation: MTP, metatarsophalangeal.

From Coughlin MJ, Shurnas PS. Hallux rigidus: grading and long-term results of operative treatment. *J Bone Joint Surg Am* 2003;85(11):2073.

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